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ABSTRACT

Children's acquisition of developmental milestones is examined within the framework of a developmental-interactive system. Piaget's stages of cognitive development are reviewed and developmental aspects of language acquisition including inner language and expressive language are discussed. (JMB)

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ACQUISITION OF DEVELOPMENTAL MILESTONES IN YOUNG CHILDREN: EDUCATIONAL

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to be presented at Pace University June 16th, 1976 June Conferences on Child Development: "A Month of the Child"

The presentation this evening will attempt to provide a neurological, psychiatric and cognitive framework of the interacting forces in the development of a child. We will attempt to look at the acquisition of developmental milestones within the framework of a developmental-interactive system. Here, developmental refers to the emphasis on identifiable patterns of growth and modes of perceiving and responding which are characterized by increasing differentiation and progressive integration as a function of chronological age. Interaction refers first to the emphasis on the child's interaction with his environment and second, to the interaction between neurological, cognitive and affective sphere of development.

These maturing systems interact in what we speak of as a "circular process". Mastery of symbol systems (letters, words and numbers), reasoning, judging, problem solving, acquiring and organizing information and all such intellectual functions are fed by and feed into varied aspects of the personality-feelings about onesself, identify, potential for relatedness, autonomy, creativity and integration. The school has a special area of influence for healthy personality because it can contribute to the development of ego strength. How a child is taught affects his image of himself, which in turn influences what he will dare and care to learn. The challenge is to provide opportunities that will make the most of this circular growth process toward greater learning powers and inner strength.

The basic philosophy is to build on an "island of health". It is to understand the complexity of organization, not only which factors play a

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determining role in the course of the individual's growth, but also how these factors interact to influence that course. The goal is how to maximize the development of a learning coping child.

The child is a complex organism with all systems in constant interaction, constantly changing. The developmental point of view sees the child as an ever evolving organism passing through stages, each of which is relevant to earlier and later development. Stimulation of any kind affects all parts of the organism. Children have biological strengths and weaknesses which interact with their environment, helping or hindering their growth. The child needs to develop emotional strength that allows for trust and autonomy and permits freedom of play and exploration before symbolic knowledge is possible. A problem for a child in one area will hinder, stunt or skew growth in other areas. Only too often does one see emotionally disturbed youngsters who have distortion of perception and language and children with central nervous system damage who have difficulty in ego development and social responses to other children. With an understanding of normal development, one can maximize the child's strengths and develop a program that will foster the greatest overall growth.

To understand the developmental milestones of childhood, we must look for the common patterns shared by all children as they grow and mature. Heinz Werner tells us that as the child matures he moves from a state of global perception and reaction to increasing differentiation and hierarchical organization. The infant initially perceives his world in a global fashion. As the child learns to differentiate increasingly between himself and other objects and people, he becomes less dominated by the stimulus field around him and more able to define himself. He develops concepts about himself and his world and in this way achieves freedom to organize and control behavior in himself and the world around him. He bins to experience that he has power over his environment.

There are those theorists, Noam Chomsky among them, who feel that the progression of differentiation and hierarchical integration and the acquisition of certain skills, such as language, are so steady, so rapid and so complex that they must be based upon innate qualities of the human species and perhaps proceed in maturational patterns that are age appropriate. Others such as Luria emphasize other aspects of this developmental process such as the role of speech in developing the regulation of behavior, or the contribution of expressive language to intellectual development and the combination of speech and perception to produce concept formation. Still others deal with teh "WHY" of development- the motivational aspects of learning. All, I am sure, would agree that it takes the nurturing and supportive environment to allow these processes to emerge.

Jean Piaget has probably made the most impact on the educational scene in the past decade. He has been preoccupied with the question of how we come to know our world and has tried to find the answers through scientific and natural observation of children. Central to Piaget's position in the concept of the organism passing through cognitive stages derived from motor action. The child is continually adding to his cognitive repertoire through the process of assimilation and accommodation. Piaget distinguishes four major stages in the development of intelligence: first, from birth to about 2 years, the sensori-motor period before the appearnace of language; second, from about 2 to 7 years, the pre-operational period; third, from about 7 to 12, a period of concrete operations; and finally about 12 years of age, the period of formal operation- all in quest of universal truths. The sensori-motor stage as a whole carries the child from inborn reflexes to acquired behavior patterns.

It leads the child from a body-centered (that is self-centered) world to an object centered one. During this period of the development of object constancy, the various sensory spaces of vision, touch, hearing and the rest are coordinated into a single space and objects evolve from their separate sensory properties into things with multiple properties, permanence and spatial relationships. The pre-operational stage (from around 2 to 7 years) covers the important period when language is acquired. This permits the child to deal symbolically with the world replacing direct motor action though his problem solving still tends to be "action ridden". The child is himself still the focus of his own world, and space and time are centered around him. Time is only "before now", "now" and "not yet" and space moves as the child moves. When he is taken for an evening walk, he thinks the moon follows HIM. The child during this stage learns gradually to conceive of a time scale and of a spatial world which exist independent of himself. During this stage, when dealing with objects, quantities, and words, the child pays attention to just one attribute neglecting all others. He concludes for example, that there is more water in a glass graduate than a beaker-though he has seen the water poured from one vessel to the other- because in the graduate the column of water is taller and the child neglects to pay attention to the other attribute, the reduction in diameter. The stage of concrete operations at about age 7, reveals a child less dependent upon his own perceptions and motor actions showing capacity for reasoning, although on a concrete level. Among his logical acquisition at this stage are classifying, ordering in a series and numbering. Asked to put a handful of sticks in order by length, he needs no longer make all the pair comparisons but can pick out the longest, then the next longest etc. At about 11 or 12 years, the child can handle abstract

relationships dealing with symbols instead of things, with the form of an argument while ignoring its content.

A discussion of educational milestones cannot be complete without mentioning the language continuum, as it is one of the major contributors to readiness for academic growth. Language, as we know, grows with the child in quantity, quality, size of vocabulary, sentence length, degree of abstraction and in all kinds of multi-dimensional ways. It is generally believed that inner language is acquired first, receptive language next and expressive language last. A child does not first learn words and then meaning; meaningfulness and experience precedes the acquisition of words. Only after he has begun to make sense out of his world, does the child begin to understand the words that represent experience. When inner language has been established to a minimal degree, the child begins to comprehend auditory verbal symbols (words); receptive language. Reciprocal relationships between processes are evidenced by the fact that with an increase in receptive language, inner language is also increased.

Finally, after minimal inner and receptive language have been established, the child acquires experssive language; he begins to talk. The "verbal mediator" begins to become a factor in the development of higher order peception and concept formation.

This process of language growth continues throughout life. With new and broader experiences we add new meanings and new words to our vocabularies. Moreover with the acquisition of new symbols, the potential for creating new thoughts and ideas is increased.

Inner language can be evaluated by carefully observing a child's play noting the appropriateness of his behavior and his ability to make sense out of his environment. If the child is presented with a series of toys, one can observe the ways the child uses and organizes them. For example, the little girls may feed her baby doll, comb her hair etc. Receptive language, the ability to comprehend spoken words can be observed when the child responds to verbal clues the adults offer. Typically the young child will respond to verbal cues the adults offer. Typically the young child will respond to verbal directions by motor action-pointing, gesturing etc. "Get me your sweater?" "Run to the door." "Can you find the pencil?"

Lastly, we come to expressive language. Although a disturbance in comprehension will affect experssion, we see children who understand but cannot speak. Expressive langauge can be thought of in three ways: word retrieval, articulation of words and the syntax of the language. On the development of word retrieval or word naming, there are those children who can remember words for the purposes of recognition when spoken to but not for spontaneous usage. These children with word finding difficulties have speech full of word substitutions, hesitancies and often a large flow of words. When shown a comb, they might say "brush" or "thing" or "you know what it is,-you use it on your hair" or "that thing with points on it". Many children with reading problems manifest word retrieval problems as well. These are often difficult to detect because the children tend to be very verbose and make sense and it is only after some time that you begin to understand that the language is not specific to the target word or in fact may be a ver different object as in the case of brush or comb. Another aspect of speech development requires a well defined motor patterning system so that words can be articulated clearly. Children with problems in this

area may be unable to enunciate specific sounds. These must be distinguished from those children with auditory processing problems who tends to mispronounce words or misplace syllables such as "sagetti for spagetti", "aminal for animal". The third aspect pertains to the syntax of the language; the formulation of sentences- the rules for putting words together to make sense and say exactly what you mean. Examples of difficulty in this area can be heard when the child says "The dog pulled the wagon with the boy" when his action shows that "the boy pulled the dog in the wagon" or the child who does not understand that words can be used in many different ways. For example such a child cannot make the shift from "I rode down the block" to "I build with blocks" or "I block that pass".

An extension of speaking includes the related symbol system; reading and writing. The developmental sequence begins with auditory verbal comprehension (listening) and progresses to oral expression (speaking), reading and writing. As you know the normal child first learns auditory language; later he learns to read and write. He superimposes a visual symbol system on the auditory one. If there is problems in the auditory-oral communication system, there is bound to be difficulty when one has to learn to read or write. But if the child is successful in his growth patterns, he will have two systems for input (listening and reading) and two systems for output (speaking and writing). A disturbance can occur at any point along this developmental continuum.

Sometime in the first year of life, we anticipate that most children will say their first intelligible word. And if that is reinforced by a smile, praise or pat, the child will continue to add to his repertoire.

A few months later children are saying many words and some children go about the house naming things (table, dog, ball); saying action words (play, see, come) and an occasional quality word (blue, bad etc.). At about 18 months, children are apt to construct two word utterances such as "push car". The beginning utterances are not said as communications systems but as reinforcers or stimulants for action, Gradually at about 3 years, children with normal development are so advanced in the construction process as to produce all the major variables of English simple sentences up to a length of 10 or 11 words.

The complexity of this whole process of developing systems is such that it defies understanding. It forever amazes this observer that children have such resiliency and inner strength that even with small amount of nurturance and support, they learn, grow and prosper.